IN THE CLAIMS

Please amend claim 67 as shown below. Please add new claims 68-81. The following listing of claims replaces all prior listings.

1-2. (Canceled).

3. (Previously presented)   A targeted vesicle composition according to Claim 17 wherein:

X^1 is $-C(=O)-NH-C(=O)-$;

X^2 is $-C(=O)-$;

R^1 is acyl having from 16 to 20 carbons;

R^3 is alkylene having from 1 to 3 carbons;

R^4 is acyl having from 16 to 20 carbons;

R^6 is a direct bond; and

R^7 is lower alkylene.

4. (Previously presented)   A targeted vesicle composition according to Claim 3 wherein:

R^1 is acyl having from 17 to 19 carbons;

R^3 is methylene;

R^4 is acyl having from 17 to 19 carbons; and

Application No.: 09/699,679
Applicants: Unger et al.
Filed: October 30, 2000
Page 3

PATENT
Attorney Docket No.: IMARX1280

R^7 is ethylene.

5. (Canceled).

6. (Previously presented)   A targeted vesicle composition according to Claim 17 wherein said hydrophilic polymer is selected from the group consisting of polyalkyleneoxides, polyvinyl alcohol, polyvinylpyrrolidones, polyacrylamides, polymethacrylamides, polyphosphazenes, poly(hydroxyalkylcarboxylic acids) and polyoxazolidines.

7. (Previously presented)   A targeted vesicle composition according to Claim 6 wherein said hydrophilic polymer comprises a polyalkyleneoxide.

8. (Previously presented)   A targeted vesicle composition according to Claim 7 wherein said hydrophilic polymer is selected from the group consisting of polyethylene glycol and polypropylene glycol.

9. (Previously presented)   A targeted vesicle composition according to Claim 8 wherein said hydrophilic polymer is polyethylene glycol.

10. (Previously presented)   A targeted vesicle composition according to Claim 8 wherein said hydrophilic polymer is PEG3400.

11. (Previously presented)   A targeted vesicle composition according to Claim 17 wherein said targeting ligand comprises a peptide of the formula:

$$(Xaa)_n—Yaa—Gly—Asp—(Zaa)_m$$

wherein:

each of m and n is independently an integer having value from 1 to 100;

Application No.: 09/699,679   ·   PATENT
Applicants: Unger et al.   Attorney Docket No.: IMARX1280
Filed: October 30, 2000
Page 4

Xaa and Zaa are independently selected from the group consisting of natural amino acids and synthetic amino acids;

Yaa is selected from Arginine, Homoarginine, and Lysine-N-acetimidate; with the further proviso that when Xaa and Zaa are sulfur containing amino acids, Xaa and Zaa may be linked together via a disulfide linkage.

12. (Withdrawn)   A targeted vesicle composition according to Claim 11, wherein:

Xaa is Glycine;

Yaa is Arginine;

Zaa is Serine;

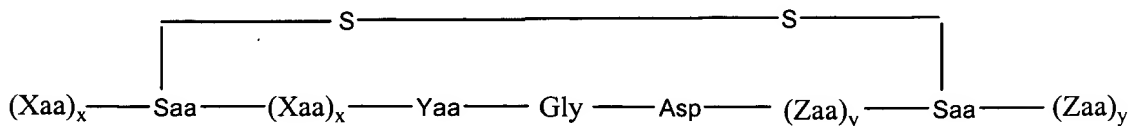n is 1, 2 or 3; and

m is 1.

13. (Withdrawn) A targeted vesicle composition according to Claim 12, wherein:

n is 3.

14. (Previously presented)   A targeted vesicle composition according to Claim 11, wherein:

Xaa and Zaa comprise an amino acid independently selected from sulfur containing amino acids.

15. (Previously presented)   A targeted vesicle composition according to Claim 17 wherein said targeting ligand comprises a peptide of the following formula:

$$(Xaa)_x \text{—} Saa \text{—} (Xaa)_x \text{—} Yaa \text{—} Gly \text{—} Asp \text{—} (Zaa)_y \text{—} Saa \text{—} (Zaa)_y$$

wherein:

each x and y is independently an integer having value from 0 to 50;

each Saa is selected from the group consisting of natural and synthetic sulfur containing amino acids, wherein sulfur atoms in said sulfur containing amino acids are linked together by a disulfide bond, as represented by S—S;

each Xaa and Zaa are independently selected from the group consisting of natural amino acids and synthetic amino acids; and
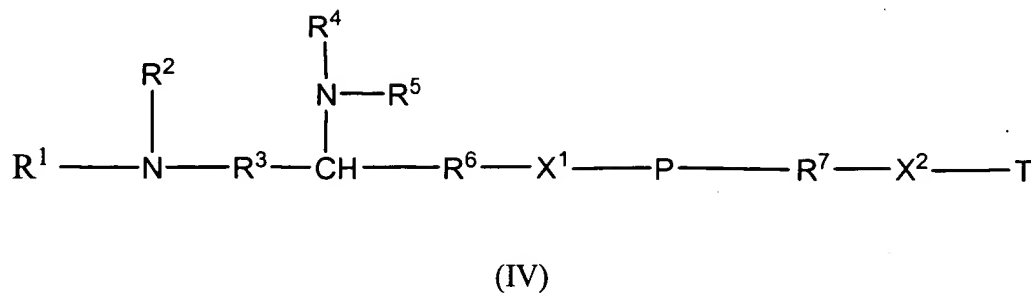
Yaa is selected from Arginine, Homoarginine, and Lysine-N-acetimidate.

16. (Previously presented)   A targeted vesicle composition according to Claim 15 wherein:

each Saa is independently selected from the group consisting of D-Cysteine, L-Cysteine, D-Penicillamine and L-Penicillamine.

17. (Previously presented)   A targeted vesicle composition for therapeutic or diagnostic use *in vivo* comprising, in an aqueous carrier, gas filled liposomes comprising a phosphatidylcholine selected from the group consisting of dioleoylphosphatidylcholine, dimyristoylphosphatidylcholine, dipalmitoylphosphatidylcholine and

distearoylphosphatidylcholine, wherein said liposomes further comprise a compound
having the formula

$$R^1 \underset{\underset{\displaystyle N}{|}}{\overset{\displaystyle R^2}{}} \cdots \overset{}{N} \cdots R^3 \cdots \underset{\underset{\displaystyle N}{|}}{\overset{\displaystyle R^4}{\overset{\displaystyle |}{N} - R^5}} \cdots R^6 \cdots X^1 \cdots P \cdots R^7 \cdots X^2 \cdots T$$

(IV)

wherein:

each of X^1 and X^2 is independently a direct bond or a linking atom or
group selected from the group consisting of $-C(=X^3)-$, $-C(=X^3)-N(R^8)-$, and
$-C(=X^3)-N(R^8)-C(=X^3)-$;

X^3 is $-O-$ or $-S-$;

R^1 acyl having from 16 to 23 carbons;

R^2 is hydrogen or lower alkyl;

R^3 is alkylene having from 1 to 10 carbons;

R^4 acyl having from 16 to 23 carbons;

R^5 is hydrogen or lower alkyl;

R^6 is a direct bond:

R^7 is a direct bond or alkylene having from 1 to 10 carbons;

R^8 is hydrogen or lower alkyl;

P is a hydrophilic polymer; and

T is a targeting ligand which targets cells or receptors selected from the group
consisting of myocardial cells, endothelial cells, epithelial cells, tumor cells and the
glycoprotein GPIIbIIIa receptor.

18-21. (Canceled).

22. (Previously presented)   A targeted vesicle composition according to Claim 17 wherein said phosphatidylcholine comprises dipalmitoylphosphatidylcholine.

23. (Previously presented)   A targeted vesicle composition according to Claim 17 further comprising a phosphatidylethanolamine selected from the group consisting of dipalmitoyl-phosphatidylethanolamine, dioleoylphosphatidylethanolamine, N-succinyldioleoyl-phosphatidylethanolamine and 1-hexadecyl-2-palmitoylglycerophosphoethanolamine.

24. (Original) A targeted vesicle composition according to Claim 23 wherein said phosphatidylethanolamine comprises dipalmitoylphosphatidylethanolamine.

25. (Previously presented)   A targeted vesicle composition according to Claim 17 further comprising dipalmitoylphosphatidic acid.

26. (Original)   A targeted vesicle composition according to Claim 17, wherein said vesicles comprise a gas selected from the group consisting of perfluorocarbons and sulfur hexafluoride.

27. (Original)   A targeted vesicle composition according to Claim 26 wherein said perfluorocarbon gas is selected from the group consisting of perfluoromethane, perfluoroethane, perfluoropropane, perfluorobutane and perfluorocyclobutane.

28. (Original)   A targeted vesicle composition according to Claim 27 wherein said perfluorocarbon gas is selected from the group consisting of perfluoropropane and perfluorobutane.

Application No.: 09/699,679
Applicants: Unger et al.
Filed: October 30, 2000
Page 8

PATENT
Attorney Docket No.: IMARX1280

29. (Original)   A targeted vesicle composition according to Claim 28 wherein said perfluorocarbon gas comprises perfluorobutane.

30. (Original) A targeted vesicle composition according to Claim 17 wherein said gas is derived, at least in part, from a gaseous precursor.

31. (Original)   A targeted vesicle composition according to Claim 30 wherein said gaseous precursor has a boiling point of greater than about 37°C.

32. (Original)   A targeted vesicle composition according to Claim 31 wherein said gaseous precursor comprises a perfluorocarbon.

33. (Original)   A targeted vesicle composition according to Claim 32 wherein said perfluorocarbon is selected from the group consisting of perfluoropentane and perfluorohexane.

34. (Original)   A targeted vesicle composition according to Claim 17 wherein said vesicles further comprise a bioactive agent that is different from said gas and said compound.

35. (Original)   A targeted vesicle composition according to Claim 34 wherein said bioactive agent comprises a therapeutic agent selected from the group consisting of genetic material, dihydroergotamine, heparin sulfate, tissue plasminogen activator, streptokinase, urokinase, hirudin, and mixtures thereof.

36-60. (Canceled).

61. (Previously presented)   A targeted vesicle composition according to Claim 4 wherein:

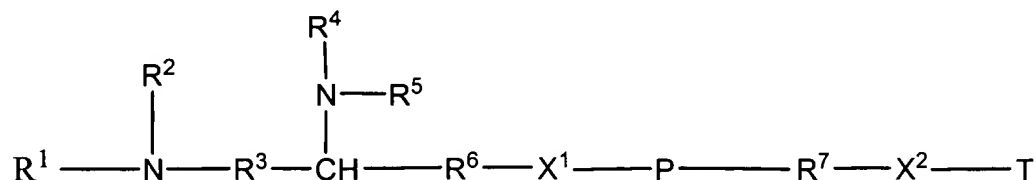each of R^1 and R^4 is acyl of 18 carbons.

62.   (Canceled)

63. (Previously presented)   A targeted vesicle composition according to Claim 4 wherein:

R^1 is an acyl of 18 carbons.

64. (Previously presented)   A targeted vesicle composition according to Claim 17, wherein said targeting ligand T is a peptide having from 3 to 20 amino acids.

65. (Previously presented)   A targeted vesicle composition according to Claim 64, wherein said peptide is cyclized by a linkage selected from the group consisting of sidechain to-sidechain covalent linkages, end-to-sidechain covalent linkages, and end-to-end covalent linkages.

66. (Previously presented)   A targeted vesicle composition for therapeutic or diagnostic use *in vivo* comprising, in an aqueous carrier, gas filled liposomes comprising a phosphatidylcholine selected from the group consisting of dioleoylphosphatidylcholine, dimyristoylphosphatidylcholine, dipalmitoylphosphatidylcholine and distearoylphosphatidylcholine, wherein said liposomes further comprise a compound having the formula

$$R^1 - N - R^3 - \underset{\underset{\underset{R^4}{|}}{\overset{|}{N}-R^5}}{\overset{}{C}H} - R^6 - X^1 - P - R^7 - X^2 - T$$

with R^2 on N (first N), R^4 and R^5 on N (second N)

wherein:

X^1 is $-C(=X^3)-N(R^8)-$;

X^2 is $C(=X^3)$;

X^3 is O;

each of R^1 and R^4 is acyl having 18 carbons;

each of R^2, R^5 and R^8 is H;

each of R^3 and R^7 is ethylene;

R^6 is a direct bond;

P is PEG-3400; and

T comprises a peptide having the sequence CRGDC, wherein the two cysteines are linked together via a disulfide linkage.

67. (Currently amended)   The A targeted vesicle composition according to Claim 66 81, further comprising wherein said bioactive agent is urokinase.

68. (New)   The targeted vesicle composition according to Claim 66, wherein said phosphatidylcholine comprises dipalmitoylphosphatidylcholine.

69. (New)   The targeted vesicle composition according to Claim 66, further comprising a phosphatidylethanolamine selected from the group consisting of dipalmitoyl-phosphatidylethanolamine, dioleoylphosphatidylethanolamine, N-succinyldioleoyl-phosphatidylethanolamine and 1-hexadecyl-2-palmitoylglycerophosphoethanolamine.

Application No.: 09/699,679
Applicants: Unger et al.
Filed: October 30, 2000
Page 11

PATENT
Attorney Docket No.: IMARX1280

70. (New)   The targeted vesicle composition according to Claim 69, wherein said phosphatidylethanolamine comprises dipalmitoylphosphatidylethanolamine.

71. (New)   The targeted vesicle composition according to Claim 66, further comprising dipalmitoylphosphatidic acid.

72. (New)   The targeted vesicle composition according to Claim 66, wherein said vesicles comprise a gas selected from the group consisting of perfluorocarbons and sulfur hexafluoride.

73. (New)   The targeted vesicle composition according to Claim 72, wherein said perfluorocarbon gas is selected from the group consisting of perfluoromethane, perfluoroethane, perfluoropropane, perfluorobutane and perfluorocyclobutane.

74. (New)   The targeted vesicle composition according to Claim 73, wherein said perfluorocarbon gas is selected from the group consisting of perfluoropropane and perfluorobutane.

75. (New)   The targeted vesicle composition according to Claim 74, wherein said perfluorocarbon gas comprises perfluorobutane.

76. (New)   The targeted vesicle composition according to Claim 66, wherein said gas is derived, at least in part, from a gaseous precursor.

77. (New)   The targeted vesicle composition according to Claim 76, wherein said gaseous precursor has a boiling point of greater than about 37°C.

78. (New)   The targeted vesicle composition according to Claim 76, wherein said gaseous precursor comprises a perfluorocarbon.

Application No.: 09/699,679
Applicants: Unger et al.
Filed: October 30, 2000
Page 12

PATENT
Attorney Docket No.: IMARX1280

79. (New)   The targeted vesicle composition according to Claim 78, wherein said perfluorocarbon is selected from the group consisting of perfluoropentane and perfluorohexane.

80. (New)   The targeted vesicle composition according to Claim 66, wherein said vesicles further comprise a bioactive agent that is different from said gas and said compound.

81. (New)   The targeted vesicle composition according to Claim 80, wherein said bioactive agent comprises a therapeutic agent selected from the group consisting of genetic material, dihydroergotamine, heparin sulfate, tissue plasminogen activator, streptokinase, urokinase, hirudin, and mixtures thereof.